

REMARKS

I. Summary of Office Action

Claims 2-5, 7, 8, 13-18, 20-25 and 27-31 were pending in the application.

The Examiner rejected claims 2-5, 7, 8, 13, 14, 22-25 27 and 28 under 35 USC § 102 over U. S. Patent Number 5,910,946 (Csapo, filed Jan. 13, 1997, issued June 8, 1999). The Examiner additionally rejected claims 15-18, 20, 21, and 29-31 under 35 USC § 103 over Csapo in view of US patent number 6,584,094 (Maroulis, filed September 12, 1996, issued June 24, 2003).

Claims 2, 13, 15, 20, 21, 22, 24, and 29 have been amended.

Claims 2-5, 7, 8, 13-18, 20-25 and 27-31 remain in the application.

II. Applicant's Technology

In this application, applicant discloses systems and methods managing the routing of data packets through a hybrid communication network. Hybrid communication networks arise out of the desire by telecommunication companies to utilize packet switched networks in their infrastructure. Many telecom service providers have taken steps toward supporting a high-speed backbone by choosing Asynchronous Transfer Mode (ATM) technology. ATM is a relay network protocol which encodes data traffic into small fixed-sized (53 byte; 48 bytes of data and 5 bytes of header information) packets of data ("cells") instead of variable sized packets ("frames") as in packet-switched networks (such as the Internet Protocol or Ethernet). ATM is a connection-oriented technology, in which a connection is established between the two endpoints before the actual data exchange begins. ATM combines the benefits of circuit-switching and packet-switching. Circuit-switching is the foundation of a PSTN, a technology that provides guaranteed capability and constant transmission delay. Packet-switching technology provides flexibility and efficient utilization of the total network bandwidth.

In one embodiment of the applicant's systems and methods, the hybrid communication network is described as including a fixed wireless network, a Public

Switched Telephone Network (PSTN) and a data network (ATM based backbone).
(Specification page 6, lines 8-12).

An important component of routing packets through an ATM network is knowledge of the network topology (see specification, page 15, lines 8-10). A network topology is the physical layout of a network. The ATM topology uses switches that establish a logical circuit from end to end, which guarantees quality of service (QoS). However, unlike telephone switches that dedicate circuits end to end, unused bandwidth in ATM's logical circuits can be appropriated when needed. For example, idle bandwidth in a videoconference circuit can be used to transfer data.

An ATM network is distinguishable from the Internet, in that the Internet is a packet-switching network with a distributed mesh topology. Information travels in packets across a network that consists of multiple paths to a destination. Networks are interconnected with routers, which forward packets along paths to their destinations. The mesh topology provides redundant links. If a link fails, packets are routed around the link along different paths. The Internet can be considered a connectionless, router and traffic flow based network. An ATM network is a connection-oriented topology-based network.

The applicant also describes the use of a fixed wireless service in one of the embodiments. Fixed wireless service refers to wireless service to devices or systems that are situated in fixed locations, such as an office or home, as opposed to devices that are mobile, such as cell phones and PDAs. Fixed wireless devices normally derive their electrical power from utility mains, as opposed to portable wireless devices that normally derive their power from batteries. The point-to-point signal transmissions occur through the air over a terrestrial microwave platform rather than through copper or fiber cables; therefore, fixed wireless does not require satellite feeds or local phone service. The advantages of fixed wireless include the ability to connect with users in remote areas without the need for laying new cables and the capacity for broad bandwidth that is not impeded by fiber or cable capacities.

Fixed wireless service is distinguishable from mobile wireless service. Typically fixed wireless requires that both antennae remain stable and fixed in their positions, while mobile wireless (as the name implies) allows the user to move freely within a specified

area. The fixed wireless environment is different from the mobile environment. With fixed wireless, narrow-beam antennas with high gains can be used to improve coverage and reduce power amplifier cost. With fixed wireless, the system architecture can be greatly simplified because there is no need to accommodate hand-off from cell to cell or to mobile cellular networks.

III. The Applied Prior Art

A. Csapo

Csapo describes a network architecture which allows for voice and data communication between subscribers without using facilities of the local and long-distance exchange carriers. (Csapo, Col.1, lines 54-57). Csapo bypasses local fixed phone lines by wireless connections and by using the Internet. (Csapo, Col. 1 line 66, Col. 2 lines 1-3). Csapo describes the network as "allow[ing] mobile subscribers (MS) 30 to trade voice and data messages with each other over the Internet network 31, and to trade voice and data messages with others over the public switched telephony networks (PSTN) 32." (Csapo, Col. 3, lines 16-23). It is important to note that Csapo does not deal with a fixed wireless network. Consequently, the description in Csapo of a home relocation register (HLR) and a visiting location register (VLR) relate to components of a mobile wireless network, and not to components of a fixed wireless network.

The relevant disclosure in Csapo is in column 4, lines 11-39, that provides the following:

"FIG. 5 depicts the scenario when a mobile subscriber places (initiates) a call by dialing a destination number which is captured by the internet base station. (Step 501). The control unit 47 initially accesses the home location register HLR (and/or visiting location register VLR) via the T1/E1 combiner circuit to request identification of the called party number and to determine the last known location of the called mobile subscriber. (Step 502). If the requested called party number is not found in the HLR, the HLR sends back the appropriate message to the IBS. (Steps

503 and 504). In this case, the call request is considered by the IBS as a mobile-to-land line equipment directed call. The IBS connects this call request to the local exchange via an ISDN connection provided by a local exchange carrier. (Step 505). When the called party goes off-hook (step 506), the connection is established and the IBS begins transmission of 64 kbps PCM voice towards the called party. (Step 507). From this standpoint, all aspects of the call are handled like a standard ISDN voice or data call. On the other hand, when the IBS's request to the HRL is returned with a positive acknowledgment, the called party is reachable via internet connection. In this case, the IBS initiates an internet based voice call connection. (Step 508). When the call set-up procedure indicates that the called party is ready for conversation (step 509), it transmits packetized compressed speech to the called party's address. (Step 510). At the same time, the called party is doing the same in the calling party's direction.

In summary, Csapo is directed to providing mobile wireless subscribers with the ability to communicate with other mobile wireless subscribers and PSTN subscribers through the Internet. If the recipient of the call is not a mobile wireless subscriber, then the call is handled as a PSTN call. This is important because the fixed wireless subscribers described in applicant's disclosure are not mobile wireless subscribers, and consequently would be handled as a PSTN call by the system described in Csapo.

B. Maroulis

Maroulis describes a system where POTS telephones attached to a Private Branch Exchange (PBX) may communicate with each other through the Internet. Queries about the connection of the called PBX to the Internet through a gateway are handled through a network signaling channel. If both PBX systems are connected to the Internet the call is

routed through the Internet. The relevant section of the Maroulis specification is quoted below:

“Pursuant to an embodiment of the invention disclosed herein, techniques are disclosed wherein a first PBX 103 coupled to a first gateway 109 determines whether or not a second PBX 105 is coupled to a second gateway 111 by using a first communications path including PSTN 115 and/or network signaling channel 115. If the second PBX is, indeed, coupled to a second gateway 111, the first PBX 103 sends its IP (internet protocol) address to the second PBX 105 over the first communications path, and the second PBX 105 sends its IP address to the first PBX 103 over the first communications path. A second communications path is established between the first PBX 103 and the second PBX 105 that includes the first gateway 109, the internet 117, and the second gateway 111. According to a further embodiment disclosed herein, the second communications path includes two conventional internet channels.” (Maroulis, Col. 3, lines 11-28)

Signaling, in the context of a network signaling channel, refers to the exchange of information between call components required to provide and maintain service. Users of the PSTN exchange signaling with network elements e.g. by dialing digits, providing dial tone, accessing a voice mailbox, sending a call-waiting tone, etc. The network signaling channel in Maroulis is described as a CCS7 channel. (Maroulis, Col. 3, lines 51-61) A CCS7 channel is a means by which elements of the telephone network exchange information. Information is conveyed in the form of messages.

Maroulis was cited by the examiner as disclosing the different endpoint devices that may be accessed through an Internet connection. Maroulis describes those devices as follows:

“Examples of such endpoint devices are facsimile (fax) machines, video conferencing equipment, DTMF (dual-

tone, multi-frequency) telephones, and/or various other types of devices which are capable of interfacing with a PBX (private branch exchange).” (Maroulis, column 2, line 66 - column 3, line 3).

In summary, Maroulis is directed to Internet communications between devices coupled to Internet connect to PBX systems.

IV. Claim Rejections

A. Claims 2

The Examiner rejected claims 2, under 35 USC §102 as anticipated by Csapo, asserting the following:

“The claimed processor determines route for transmission of information based on query signal, based on identified subscriber service associated with destination and based on characteristics in memory, wherein one of the one or more characteristics of destination includes information relating to equipment at destination and processor or network element other than source packetizes information sent over route is disclosed by Csapo by base station retrieving information on called party number from HLR, determines Internet based voice call as subscriber service is possible and base station transmits packetized compressed speech to called party’s address (step 510).” (Office Action, p.3 ¶2, to p. 4).

The examiner points to the following language in the Csapo reference as supporting the preceding conclusion:

On the other hand, when the IBS’s request to the HLR is returned with a positive acknowledgment, the called party is reachable via Internet connection. In this case, the IBS initiates an Internet based voicecall connection. (Step 508). When the call set-up procedure indicates that the called

party is ready for conversation (step 509), it transmits packetized compressed speech to the called party's address. (Step 510). At the same time, the called party is doing the same in the calling party's direction. (Csapo, Col. 4, lines 31-39)

Claim 2 has been amended to clarify that the information relating equipment at the destination relates to equipment that is one of a fixed wireless subscriber device or a PSTN subscriber telephone. Support in the specification is found on page 6 lines 8-9. The claims have further been amended to include the concept that the routing is determined in part by information about the network topology stored in a data store. Support in the specification is found on page 15, lines 7-10.

It is important to note that Csapo relates to connecting a mobile wireless subscriber with another mobile wireless subscriber through the Internet. There is no disclosure in the Csapo reference relating to fixed wireless devices. Additionally, there is no disclosure in the Csapo reference suggesting that network topology should be taken into account when determining the routing of the call. The system described in Csapo would not be able to distinguish between a fixed wireless device and a PSTN telephone. That system would instead treat them both the same and route the call as though the call were a PSTN telephone call. In Csapo the determination of how to handle the call is made by reference to an HLR and VLR. The HLR is the main database of permanent subscriber information for a mobile network. The VLR maintains temporary user information (such as current location) to manage requests from mobile wireless subscribers who are out of the area covered by their home system. Neither the HLR nor the VLR are necessary for fixed wireless networks.

Additionally, Csapo does not disclose a system including a subsystem that stores one or more characteristics of the destination including information indicating a type of service associated with the destination wherein the type of service is one of a fixed wireless service or a PSTN service. Csapo does not disclose a subsystem that stores information about the topology of the network. Finally, Csapo does not disclose a subsystem that determines the route for transmission of the information based on the

aforementioned type of service characteristics and information about the topology of the network.

It is respectfully submitted that claim 2 is patentable over Csapo. Applicant requests that the examiner reconsider and allow the claim.

B. Claim 3

The Examiner rejected claims 3, under 35 USC §102 as anticipated by Csapo. The examiner rejected claim 3 on the basis that a description of the mobile subscriber is disclosure of a fixed wireless service subscriber. As stated above, fixed wireless and mobile wireless networks are different, and Csapo makes no mention of a fixed wireless network. As previously stated, Csapo would treat the routing of a call to a fixed wireless network device the same as a call to a PSTN device. This is different from the claimed system that routes those calls differently.

It is respectfully submitted that claim 3 is patentable over Csapo. Applicant requests that the examiner reconsider and allow the claim.

C. Claim 4

The examiner rejected claim 4 under 35 USC §102 as anticipated by Csapo on the same basis as claim 3. It is respectfully submitted that claim 4 is patentable over Csapo for the same reasons as set out for claim three above.

Applicant requests that the examiner reconsider and allow the claim.

D. Claim 5

The examiner rejected claim 5 under 35 USC §102 as anticipated by Csapo asserting that the claim limitation of the destination subscribing to a PSTN service network is disclosed in Csapo by the possibility of a mobile-to-land line equipment directed call. Claim 5 incorporates the limitations of claim 2 and is patentably distinct from Csapo in that Csapo does store information differentiating whether the destination service is a fixed wireless service or a PSTN service, or information about network topology and uses that information in the determination of the routing of the call.

Applicant requests that the examiner reconsider and allow the claim.

E. Claim 7

The examiner rejected claims 7 under 35 USC §102 as anticipated by Csapo by asserting that Csapo discloses digitized voice by compression of speech from PCM to packet form. Claim 7 incorporates the limitations of claim 2 and is patentably distinct from Csapo in that Csapo does store information differentiating whether the destination service is a fixed wireless service or a PSTN service, or information about network topology and uses that information in the determination of the routing of the call.

Applicant requests that the examiner reconsider and allow the claim.

F. Claim 8

The examiner rejected claim 8 under 35 USC §102 as anticipated by Csapo by asserting that Csapo discloses the use of a DTMF signal by compression of speech from PCM to packet form. Claim 8 incorporates the limitations of claim 2 and is patentably distinct from Csapo in that Csapo does store information differentiating whether the destination service is a fixed wireless service or a PSTN service, or information about network topology and uses that information in the determination of the routing of the call.

Applicant requests that the examiner reconsider and allow the claim.

G. Claim 13

The examiner rejected claim 13 under 35 USC §102 as anticipated by Csapo, in part because in the view of the examiner of the claimed memory for storing one or more characteristics of the destination indicating at least one of two types of equipment at the destination is disclosed by Csapo as a base station utilizing a home location register to request identification of the called party number.

As presently amended, claim 13 is patentably distinct from Csapo because Csapo does not disclose the storage and use of information differentiating the destination service as being a fixed wireless service or a PSTN service, or the storage and use of information about the topology of the networks. The description of the use of an HLR in Csapo does not have application in the context of a fixed wireless service, or fixed wireless devices. In Csapo the routing of the calls to either a fixed wireless service device or a PSTN

service device would both be handled the same. In applicant's invention, as laid out in claim 13, the routing of the call would be handled differently.

Applicant requests that the examiner reconsider and allow the claim.

H. Claim 14

The examiner rejected claim 14 under 35 USC §102 as anticipated by Csapo for the same reasons as laid out in the rejection of claim 13. It is respectfully submitted that claim 14 is patentable over Csapo for the same reasons as claim 13.

Applicant requests that the examiner reconsider and allow the claim.

I. Claim 15

The examiner rejected claim 15 under 35 USC §103 (a) as obvious over Csapo in view of Maroulis.

Claim 15 has been amended to identify the packet network as an ATM packet network. Additionally, claim 15 has been amended to incorporate a method element of storing information about the ATM packet network topology. Furthermore claim 15 has also been amended to specify that the subscriber service at the destination is one of a fixed wireless service or a PSTN service. Finally, claim 15 has been amended to include the ATM packet network topology information in the determination of the transmission for routing of the information.

Neither Csapo nor Maroulis disclose the routing of calls through an ATM network. The use of network topology information in making routing decisions is not disclosed by either reference. The use of network topology information is critical in the routing of calls in an ATM network, in that unlike the Internet, the ATM network topology may be a hierarchical structure unlike the Internet.

Is respectfully submitted that claim 15 is patentable over Csapo in view of Maroulis.

Applicant requests that the examiner reconsider and allow the claim.

J. Claim 16-18

The examiner rejected claim 16-18 under 35 USC §103 (a) as obvious over Csapo in view of Maroulis on the same basis as the rejection for claim 15. It is submitted that

claim 16-18 are patentable over Csapo in view of Maroulis for the same reasons as set forth above for claim 15.

Applicant requests that the examiner reconsider and allow the claim.

K. Claim 20

The examiner rejected claim 20 under 35 USC §103 (a) as obvious over Csapo in view of Maroulis. Claim 20 depends from amended claim 15. As stated previously, neither Csapo nor Maroulis describe a system utilizing an ATM packet network, nor the use of the ATM packet network topology for making routing decisions for calls. It is respectfully submitted that claim 20 is not rendered obvious by Csapo in view of Maroulis.

Applicant requests that the examiner reconsider and allow the claim.

L. Claim 21

The examiner rejected claim 21 under 35 USC §103 (a) as obvious over Csapo in view of Maroulis. The examiner asserted the same arguments as set out a claim 15. It is respectfully submitted that claim 21 is patentable with the same reasons as set out above for claim 15.

Applicant requests that the examiner reconsider and allow the claim.

M. Claim 22

The examiner rejected claim 22 under 35 USC § 102 as anticipated by Csapo.

Claim 22 has been amended to set out that one of the networks in a plurality of networks recited in the preamble is an ATM packet network. Claim 22 further recites a subsystem that stores one or more characteristics of the destination and a subsystem that stores information about the ATM packet network topology. Claim 22 has also been amended to include at least one subsystem that identifies the subscriber service associated with the destination. And finally, claim 22 has been amended to include a subsystem that determines a transmission path based on the received query signal, the stored ATM packet network topology information, the stored characteristics and the identified subscriber service associated with the destination.

As previously stated, Csapo does not disclose the use of an ATM packet network nor a subsystem that uses information about the network topology to make routing decisions.

As presently amended, claim 22 is not anticipated by Csapo.

Applicant requests that the examiner reconsider and allow the claim.

N. Claim 23

The examiner rejected claim 23 under 35 USC § 102 as anticipated by Csapo. The examiner argued that the disclosure of a mobile subscriber is equivalent to a fixed wireless subscriber. Claim 23 depends from claim 22 and incorporates the elements relating to the ATM packet network topology and a subsystem that determines the transmission path for the routing of information in part by using the stored ATM packet network topology. As stated above with regard to claim 22 Csapo does not disclose the use of an ATM network nor utilization of information about ATM network topology in order to make routing decisions. It is submitted that claim 23 is patentable over Csapo.

Applicant requests that the examiner reconsider and allow the claim.

O. Claim 24

Claim 24 has been amended to recite the additional element of a subsystem that converts information sent over the transmission path into data packets. The examiner rejected claim 24 under 35 USC § 102 as anticipated by Csapo. Claim 24 recites the limitations of claim 23 and 22 and incorporates the concept of an ATM network and the use of information about the ATM network topology in making routing decisions. These concepts are not disclosed nor suggested by the Csapo reference. It is respectfully submitted that the claim as amended is patentable over Csapo.

Applicant requests that the examiner reconsider and allow the claim.

P. Claim 25

Claim 25 was rejected on the same basis as claim 22. Claim 25 depends from amended claim 22 that recites the utilization of an ATM network topology in making the routing decisions. This limitation is not disclosed by Csapo.

Applicant requests that the examiner reconsider and allow the claim.

Q. Claim 27

Claim 27 was rejected under 35 USC § 102 as anticipated by Csapo for the same reasons as claim 22 and further by the assertion that Csapo discloses compression of speech from PCM to packet form. It is submitted that because claim 22 is patentably distinct from the Csapo reference, claim 27 is now in allowable form.

Applicant requests that the examiner reconsider and allow the claim.

R. Claim 28

Claim 28 was rejected under 35 USC § 102 as anticipated by Csapo for the same reasons as claim 22 and further by the assertion that Csapo discloses compression of speech from PCM to packet form. It is submitted that because claim 22 is patentably distinct from the Csapo reference, claim 28 is now in allowable form.

Applicant requests that the examiner reconsider and allow the claim.

S. Claim 29

The examiner rejected claim 29 under 35 USC § 103 as obvious over Csapo in view of Maroulis. Claim 29 has been amended to recite a method element of storing information about the ATM packet network topology, and a method element of determining a route of transmission based in part on the network topology. As stated above, sample does not disclose the use of network topology information in making routing decisions. It is submitted that claim 29 is patentably distinct from the combination of Csapo and Maroulis.

Applicant requests that the examiner reconsider and allow the claim.

T. Claim 30

The examiner rejected claim 30 under 35 USC § 103 for the same reasons as laid out for claim 29. It is respectfully submitted that claim 30 is now in allowable for the same reasons as claim 29.

Applicant requests that the examiner reconsider and allow the claim.

U. Claim 31

The examiner rejected claim 31 under 35 USC §103 for the same reasons as laid out for claim 29. It is respectfully submitted that claim 31 is now allowable for the same reasons as claim 29.

Applicant requests that the examiner reconsider and allow the claim.

In view of the foregoing amendments and remarks, Applicant submits that the above-identified application is in condition for allowance. Early notification to this effect is respectfully requested.

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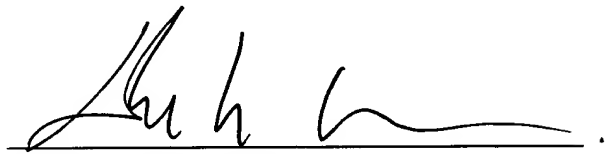
U. Claim 31

The examiner rejected claim 31 under 35 USC §103 for the same reasons as laid out for claim 29. It is respectfully submitted that claim 31 is now allowable for the same reasons as claim 29.

Applicant requests that the examiner reconsider and allow the claim.

In view of the foregoing amendments and remarks, Applicant submits that the above-identified application is in condition for allowance. Early notification to this effect is respectfully requested.

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